MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018

PMT0104 – FUNDAMENTAL MATHEMATICS I

(All sections / Groups)

5 MARCH 2018
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **THREE (3)** printed pages including the cover page with 4 questions only.
2. Answer all **FOUR (4)** questions
3. Write all your answers in the answer booklet provided.
4. Only NON-PROGRAMMABLE calculator is allowed.

Question 1 (25 Marks)

a) Perform the indicated operations and simplify.

i. $5(x^2 - y^2) + x(y - 3x) - 4y(2x + 7y)$ **(3 marks)**

ii. $(x+1)(x^2 + x + 3)$ **(3 marks)**

iii. $\dfrac{x-2}{x^2+6x+9} - \dfrac{x+2}{x^2-9}$ **(6 marks)**

b) Write the expression in term of positive exponents.

$$\frac{(x^2y^{-3}z^4)^5}{(x^{-1}z^{-2})^{-3}}$$ **(4 marks)**

c) If given $z = 2 - 4i, w = 6 + 8i$, find,

i. wz **(3 marks)**

ii. $\dfrac{z}{w}$ **(6 marks)**

Question 2 (25 Marks)

a) Solve for x.

i. $5(x - 7) - 2(3x - 4) = 3x$ **(3 marks)**

ii. $\dfrac{4}{3}(5x-2) = 7[x - (5x - 2)]$ **(5 marks)**

iii. $\sqrt{x+1} = \sqrt{2x-3}$ **(3 marks)**

iv. $|x - 5| + 9 = 4$ **(5 marks)**

b) Solve the following quadratic equations by using given method.

i. $x^2 + 3x - 10 = 0$ factoring **(2 marks)**

ii. $4x^2 + 5x - 2 = 0$ quadratic formula **(5 marks)**

c) Solve the inequalities and give the answer in interval notation.

$5x - 11 \leq 9$ **(2 marks)**

Continued...

Question 3 (25 Marks)

a) If $f(x) = x^2 - 1$ and $g(x) = 6 + x$, find

i. $(f+g)(-2)$ **(3 marks)**

ii. $(f-g)(3)$ **(3 marks)**

iii. $(f \circ g)(4)$ **(3 marks)**

iv. $(g \circ f)(-1)$ **(3 marks)**

b) Sketch the graph of $y = (x-1)^2 + 1$. Start with the graph of the basic function and show all the stages. **(6 marks)**

c) Find the remainder if $f(x) = 4x^4 - 15x^2 - 4$ is divided by

i. $x - 2$; using synthetic division **(5 marks)**

ii. $x - 5$; using Remainder Theorem **(2 marks)**

Question 4 (25 Marks)

a) Find the indicated term of the sequence.

90^{th} term of $1, -2, -5, \ldots$ **(4 marks)**

b) Find the summation of the first ten terms of the sequence **(5 marks)**

$$\frac{1}{4} + \frac{1}{2} + 1 + 2 + \ldots$$

c) Given a straight line L containing $P_1 = (-1,3)$ and $P_2 = (5,-1)$. Find,

i. the distance from P_1 to P_2. **(3 marks)**

ii. the midpoint of the line segment joining P_1 and P_2, **(2 marks)**

iii. the slope of straight a line containing P_1 and P_2, **(2 marks)**

iv. the equation of straight line containing P_1 and P_2. **(4 marks)**

v. the equation of a perpendicular line to L that passing through point $(4,-3)$. **(5 marks)**

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